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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/630,888 | 07/30/2003 | Michio Yanagi | 1232-5094 | 7944 |

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NEW YORK, NY 10154

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| EXAMINER |
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BOUTSIKARIS, LEONIDAS

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| ART UNIT | PAPER NUMBER |
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2872

DATE MAILED: 03/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/630,888

Applicant(s)

YANAGI ET AL.

Examiner

Leo Boutsikaris

Art Unit

2872

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 July 2003.
2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-4 and 11 is/are rejected.
7) ☒ Claim(s) 5-10, 12 and 13 is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 30 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 11/28/03
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____

DETAILED ACTION

Priority

Acknowledgment is made of applicant's claim for foreign priority based on applications filed in Japan on 7/30/2002 and on 9/24/2002. It is noted, however, that applicant has not filed a certified copy of the above applications as required by 35 U.S.C. 119(b).

Claim Objections

Claims 1-10, 12-13 are objected to because of the following informalities:

Claim 1 cites "a film of the outermost layer" in line 6, which lacks antecedent basis. It is suggested that the above is replaced by "a film of an outermost layer".

Claim 4 cites "n: reflectance" in line 4, which should be replaced by "n: refractive index of film".

Claim 13 cites "an aperture device according to claim 10", which lacks antecedent basis. It is suggested that the above claim is made dependent on claim 12.

Claims 2-10, 12-13 inherit the deficiency of claim 1 from which they depend.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2 cites "heat treatment in an atmosphere" which is indefinite as to what conditions it refers to. For examination purposes it will be taken that it means heat treatment under atmospheric pressure, i.e., not in vacuum.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 11 is rejected under 35 U.S.C. 102(b) as being anticipated by Krekeler (DE 2147261).

Krekeler discloses an ND filter used for exposure control in photo-copying machines comprising:

- a substrate 1;
- a film of one layer 2 formed on the substrate and having gradation thickness distribution;
- a film of an outermost layer 3 which is formed on the film 2 having the gradation thickness distribution.

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 11 is rejected under 35 U.S.C. 102(e) as being anticipated by Erz (US 2002/0176183).

Erz discloses an ND filter (see Fig. 4) comprising:

a substrate ;

a film of one layer formed on the substrate and having gradation thickness distribution;

a film of an outermost layer which is formed on the film having the gradation thickness distribution (Fig. 3, [0020]).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Erz (US 2002/0176183) in view of Boucher (US 5,993,904).

Regarding claim 1, Erz discloses all the limitations of the above claim except for teaching that the variable thickness layer is fabricated by using a rotating slit mask along with substrate. Boucher (US 5,993,904, Fig. 4) discloses a method for making an optical filter having a film of at least one layer having a gradation thickness distribution, by rotating a slit mask along with

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substrate, the mask and the substrate being spaced apart in a fixed distance, during evaporation of material from a source (lines 19-48, col. 10). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the method of Boucher for making the variable thickness layer in Erz's optical filter, since the efficiency of the coating process is optimized due to the controlled way of varying the angle of incidence of the deposited material. (lines 36-39, col. 3 in Boucher).

Regarding claim 3, the outermost layer has constant thickness (Fig. 3).

Regarding claim 4, the outermost layer is a "quarter wavelength" layer ([0020]).

Allowable Subject Matter

Claim 2 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, and the objection, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Claims 5-10, 12-13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims, and if they overcome the objections set forth in this Office action.

Claims 2, 5-10, 12-13 are allowable over the prior art for at least the reason that the prior art fails to teach or reasonably suggest, regarding claim 2, a method for manufacturing an ND filter under the claimed conditions for pressure and temperature, regarding claim 5, a method for manufacturing an ND filter, comprising the step of forming a second film having a gradation thickness distribution in an opposite direction from the first layer while rotating a second slit

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mask, regarding claims 6-10, a method for manufacturing an ND filter, wherein the slit mask has the claimed shapes, and regarding claims 12-13, an aperture device comprising an ND filter fixed to the aperture blades, wherein the ND filter is made by forming a film of at least one layer having a gradation thickness distribution, while rotating a slit mask having a dotted pattern, as set forth by the claimed combination.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Leo Boutsikaris whose telephone number is 571-272-2308.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Leo Boutsikaris, Ph.D.
Patent Examiner, AU 2872
February 8, 2004

